

**Translation**

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>543568WO01</b>	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. <b>PCT/JP2004/000742</b>	International filing date (day/month/year) <b>28.01.2004</b>	Priority date (day/month/year) <b>29.05.2003</b>	
International Patent Classification (IPC) or national classification and IPC			
Applicant <b>MITSUBISHI DENKI KABUSHIKI KAISHA</b>			

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>17</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																									
<p>4. This report contains indications relating to the following items:</p> <table> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>		<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-3, 8-42 as originally filed/furnished
- pages\* 4-7/1 received by this Authority on 03.08.2005
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. Refer to the Supplemental Box as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1-15 as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, nos. 7, 14, 34
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
( Novelty (N)	Claims	1-6, 8-13, 15-33, 35-59	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-6, 8-13, 15-33, 35-59	NO
Industrial applicability (IA)	Claims	1-6, 8-13, 15-33, 35-59	YES
	Claims		NO
2. Citations and explanations (Rule 70.7)			
<p>Document 1: JP 11-229159 A (Mitsubishi Electric Corp.), 24 August 1999, paragraphs [0011] and [0017] to [0020], and fig. 5</p> <p>Document 2: JP 06-033261 A (Toyo Kohan Co., Ltd.), 08 February 1994, claim 1 and paragraph [0019]</p> <p>Document 3: WO 99/58744 A1 (Mitsubishi Electric Corp.), 18 November 1999, page 25, lines 12 to 15</p> <p>Document 4: WO 01/023641 A1 (Mitsubishi Electric Corp.), 05 April 2001, page 9, lines 19 to 23</p> <p>Document 5: JP 05-214402 A (Nippon Steel Welding Products &amp; Engineering Co., Ltd.), 24 August 1993, paragraph [0003]</p> <p>Document 6: JP 2003-003204 A (Showa Denko Kabushiki Kaisha), 08 January 2003, paragraph [0018]</p> <p>The inventions set forth in claims 1 to 4, 8, 9, 11, 12, 15 to 18, 25 to 29, 31, 32, 35, 36, 38 to 40, 42 to 46, 48 to 49, 51 to 53, 55 to 57 and 59 do not involve an inventive step in the light of document 1 and document 3 (page 25, lines 12 to 15) or document 4 (page 9, lines 19 to 23) cited in the international search report.</p> <p>It would have been easy for a person skilled in the art to conceive of employing a material that contains</p>			

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

alumina ( $\text{Al}_2\text{O}_3$ ) or titanium carbide ( $\text{TiC}$ ), which is to say a material that is capable of forming a coating film that has a thickness of 100  $\mu\text{m}$  or more, as the green compact electrode material of the invention that is disclosed in document 1 in the light of the disclosures of document 3 or document 4.

In addition, given the nature of the methods for expressing the particle diameters which are commonly used in the technical field in question, it is apparent that 10% or more of the electrode material in the invention that is disclosed in document 1 has particle diameters of not less than 10 nm and not more than 3  $\mu\text{m}$ .

Furthermore, it would have been easy for a person skilled in the art to conceive of employing a homogenous green compact electrode in the invention that is disclosed in document 1 in order to provide a homogenous surface treatment layer upon the material to be treated.

The inventions set forth in claims 5, 6, 10, 19 to 21, 30 and 47 do not involve an inventive step in the light of document 1 and document 2 (claim 1 and paragraph [0019]). In the light of the disclosures of document 2 it would have been easy for a person skilled in the art to conceive of substituting the green compact electrode material of the invention that is disclosed in document 1 with a material that has been ground up by means of a ball mill or the like, refined and then dried. In addition, it can be said to be natural for particles that are obtained by refining a material while crushing said material by means of a ball mill to have a flake-like form.

The inventions set forth in claims 13, 33 and 50 do not involve an inventive step in the light of document 1

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and document 2 (claim 1). For example, document 2 discloses the feature of employing conventional Co alloys, Ni alloys and Fe alloys as green compact electrode materials; therefore, it would have been easy for a person skilled in the art to conceive of employing conventional Co alloys, Ni alloys and Fe alloys as the green compact electrode material in the invention that is disclosed in document 1.

The invention set forth in claims 22 and 23 does not involve an inventive step in the light of document 1, document 2 and document 5 (paragraph [0003]) cited in the international search report. It would have been obvious to a person skilled in the art that is necessary to configure the ball, the container and the like of the ball milling device from the same constituent material as the metal powder or from a material that will not materially harm the metal powder even if mixed therewith, as disclosed in document 5.

The invention set forth in claim 24 does not involve an inventive step in the light of document 1, document 2 and document 6 (paragraph [0018]) cited in the international search report. Zirconium is commonly used as the constituent material for the ball, the container and the like of a ball mixing device.

The inventions set forth in claims 37, 41, 54 and 58 do not involve an inventive step in the light of document 1 (paragraph [0011]). A person skilled in the art could have optimized the pulse width and the peak current value of the invention that is disclosed in document 1 so as to accommodate the desired discharge coating characteristics, as appropriate.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box I.

2. Claims:

nos. 3, 4, 10-13, 15, 18, 20-25, 30-33, 35, 40-42, 47-54, 57-59

as originally filed/furnished

nos. 1, 2, 5, 6, 8, 9, 16, 17, 19, 26-29, 36-39, 43-46, 55, 56

as received by the present International Preliminary  
Examining Authority on 03 August 2005